What is claimed is:

1. A data multiplexing method comprising the steps of:

storing a video stream and an audio stream in first and second buffers, respectively;

comparing said video stream and audio stream from said first and second buffers with each other to determine an order of packets and a parameter in such a way that in generation of a multiplexed stream to be outputted, a difference of playback start time or a difference of playback end time of video and audio to be recorded in a same video object unit becomes equal to or smaller than a threshold; and

dividing said video stream and audio stream from said first and second buffers into data blocks in accordance with said parameter and adding headers to said data blocks to produce packets, multiplexing said packets and outputting a multiplexed stream.

2. A data recorded medium on which a multiplexed stream is recorded that includes a video stream and an audio stream and is acquired by dividing each of said video stream and said audio stream into data blocks, adding headers to said data blocks to produce packets and multiplexing said packets,

said multiplexed stream being such that a difference of playback start time or a difference of playback end time of video and audio included in a

specific one of video object units each having a series
of packets including at least one group of pictures,
which is a video encoding unit in said video stream,
becomes equal to or smaller than a threshold.

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3. The data recorded medium according to claim 1,
wherein said threshold is an integer multiple of a
duration time of reproduction of an audio access unit.

10   4. A data recorded medium on which a multiplexed
stream is recorded that includes a video stream and an
audio stream and is acquired by dividing each of said
video stream and said audio stream into data blocks,
adding headers to said data blocks to produce packets
15 and multiplexing said packets and which is of a model
that allows said multiplexed stream to be read in a
buffer of a decoder packet by packet and to be
outputted picture by picture and audio access unit by
audio access unit in accordance with a playback time,

20   said multiplexed stream being such as to satisfy
a condition of $Tea \leq Tsv$ where Tsv is a read start time
of a head packet in a specific one of video object
units each having a series of packets including at
least one group of pictures, which is a video encoding
25 unit in said video stream, and Tea is a read end time
of a packet including data of a last portion of an
audio access unit having a playback end time after but
closest to a playback start time of video included in

40

said specific video object unit or an audio access unit having a playback end time after but closest to that playback start time.

5   5. The data recorded medium according to claim 4, wherein said threshold is an integer multiple of a duration time of reproduction of said audio access unit.

       6. A data recording apparatus for dividing each

10   of a plurality of streams including a video stream and an audio stream into data blocks, adding headers to said data blocks to produce packets, multiplexing said packets and recording said multiplexed packets, comprising:

15   first buffer means for storing said video stream;
            second buffer means for storing said audio stream;
            a control section for comparing said video stream from said first buffer means with said audio stream

20   from said second buffer means to determine an order of packets and a parameter in such a way that a difference of playback start time or a difference of playback end time of video and audio to be recorded in a same video object unit in a multiplexed stream to be outputted

25   becomes equal to or smaller than a threshold and outputting said parameter; and
            a multiplexing section for dividing said video stream from said first buffer means and said audio

41

stream from said second buffer means into data blocks in accordance with said parameter and adding headers to said data blocks to produce packets, multiplexing said packets and outputting a multiplexed stream.

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7. The data recording apparatus according to claim 6, wherein said threshold is an integer multiple of a duration time of reproduction of an audio access unit.

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8. A program for allowing a computer to execute procedures of dividing each of a plurality of streams including a video stream and an audio stream into data blocks, adding headers to said data blocks to produce
15 packets, multiplexing said packets and recording said multiplexed packets, comprising:

a first step of storing said video stream and said audio stream in buffers;

a second step of comparing said video stream and
20 audio stream read from said buffers with each other to determine a multiplexing timing in such a way that a difference of playback start time or a difference of playback end time of video and audio to be recorded in a same video object unit in a multiplexed stream to be
25 outputted becomes equal to or smaller than a threshold and outputting said parameter; and

a third step of multiplexing video packets and audio packets in accordance with said multiplexing

42

timing and outputting a multiplexed stream.

9. The program according to claim 8, wherein said threshold is an integer multiple of a duration time of reproduction of an audio access unit.

10. The program according to claim 8, wherein said second step includes:

a fourth step of discriminating and separating said video stream and said audio stream;

a fifth step of detecting a picture in said video stream and calculating a playback time;

a sixth step of detecting an audio access unit of said audio stream and calculating a playback time;

a seventh step of determining a data division position and making data blocks for said video stream;

an eighth step of determining a data division position and making data blocks for said audio stream;

a ninth step of calculating a capacity of a virtual video buffer for said video stream and calculating a range of a video multiplexing timing;

a tenth step of calculating a capacity of a virtual audio buffer for said audio stream and calculating a range of an audio multiplexing timing;

an eleventh step of determining final multiplexing timings for video and audio packets from said playback times and said capacities of said virtual buffers for said video stream and said audio stream;

43

and

a twelfth step of adding headers to said data
blocks to produce packets and outputting said packets
in accordance with said final multiplexing timings.

11. The program according to claim 10, wherein
said threshold is an integer multiple of a duration
time of reproduction of said audio access unit.

12. A decoder comprising:
a demultiplexer for separating at least a video
stream and an audio stream from a multiplexed stream
including said video stream and said audio stream;
a video decoding section for playing back video
via a video buffer for buffering said separated video
stream; and
an audio decoding section for playing back audio
via an audio buffer for buffering said separated audio
stream,
a capacity of said audio buffer being set equal
to or larger than a value obtained by adding a maximum
value of a delay time of a picture in said video stream
in said multiplexed stream with respect to a video
buffering verifier and a playback time of one frame of
said video stream together and multiplying a resultant
value by a maximum bit rate of said audio stream.

44